

Response Template

Aerial appliance fleet and capability review – Discussion Document

United Fire Brigades' Association

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Response Participants

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Strategy Development

Question 1: *Should complementary equipment such as drones be considered in the revised Aerial Appliance Strategy or should these assets be assessed within a wider revised National Fleet strategy?*

Any new technology that can assist personnel to help communities prevent, prepare, respond, and recover from emergencies should be considered. However, clear and robust processes for reviewing new technologies must be developed and implemented to ensure fitness for purpose. This means carefully establishing criteria and a transparent procurement process that involves the end users. Training and rollout should be considered during procurement and planned for in advance of roll out. Any decisions about new technology should be based on clear evidence of suitability for the risk profile of the community.

We are aware that drones are already used effectively in rural situations to detect hot spots, for 3D terrain mapping, ortho 3D mapping, aerial photography, real time aerial observation, and multi spectral vegetation analysis. Observation using a drone is relatively straightforward however drones collect a massive amount of data and are often used in conjunction with satellites. Using drones in this way requires specialist operators and is a considerable cost. This use will need careful assessment by Fire and Emergency.

Our experience of appliance procurement and rollout is that it has not been managed well. Therefore, we believe that drones should be assessed within a wider revised National Fleet strategy. The procurement and rollout of aerial appliances should be the focus to ensure good management.

Question 2: *What should the time horizon of the revised Aerial Appliance Strategy be? e.g. 10, 15, 20 years and why?*

The right time frame for a strategy depends on what its implementation will require.

Changes in climate, population and advances in technology should be taken into account when considering a time horizon for strategy. The strategy should be able to adapt and learn from front line experience and research.

We believe 10-15 years is the maximum time for the revised Aerial Appliance Strategy.

Any strategy should align with anticipated government-led changes to environmental regulations.

Aerial Capability and lifespan

Question 3: *Are there any risks or challenges with current aerial capability that have not been captured within the discussion document?*

Consideration should be given to how aerial appliances can be used to better support volunteer brigades, especially heavy pump aerals in provincial centres (PDA changes, career crews promoting and training with volunteers to ensure better understanding of tactical advantages of aerial appliances). A BA Procedure type rollout for aerial operations in volunteer areas that may get an aerial response might be effective.

We have identified several operational issues we would like to highlight:

- An issue with bespoke builds, such as the Heavy Aerial Type 6 is that when untried engineering breaks down there is little support.
- Thorough testing of appliances is needed before they are put into operation. For example, Heavy Aerial Type 5 is flow rated 3500l/m but has an actual flow rate of 2500l/m. If this appliance had been tested before going into use a remedy could be sought more easily from the manufacturer.
- Community needs versus risk in the community should be considered. For example, population growth and associated infrastructure change such as high-rise development might indicate the use of more Heavy Pump Aerials; however, more crowded roads and awkward access might limit an aerial's effectiveness. Appropriate appliances should be available for the specific circumstances of each community.

A concern about organisational apathy and a culture of disdain towards aerial appliances was raised during the development of this response. We do not have specific evidence of this; however, we believe it is something that warrants further investigation.

Other considerations we have identified:

- Review and update the Aerial Appliance Policy which is currently light on information considering the importance of and capital investment required in aerial appliances.
- Relief/Training Appliances: Consider suitability of having only two Heavy Pump Aerial relief appliances, a third could provide training capability in addition to relief appliance duties.
- PDA/Response Standards: Review in conjunction with Aerial Appliance Review to ensure new appliances are utilised to their full potential.

Below is a list, compiled by the Aerial Working group, of incidents where Fire and Emergency New Zealand might use Aerial Appliances, either as a lead or supporting agency. However, there is a lack of data to show how aerial appliances are being used.

Looking at just Auckland and Dunedin calls over the last few years, there is evidence that Aerials are used in most of the situations mentioned; mainly fire attack and exposure protection while including rescues, patient lifts and observation platform.

Better quality data collection would inform the choice and use of aerial appliances and gathering it should be factored into the strategy.

1. Aerial use by Fire and Emergency as lead or sole agency

Use	Description
Observation	• Command and Control decision making • Operations monitoring and safety planning
Removal or mitigation	• Structure materials for access • Structure materials for safety • Gas hazard • Vegetation hazards
Recovery	• Fallen patient • Medical patient (incl. mental health/suicidal)
Provision	• Emergency lighting • Mechanical Ventilation • Telemetry Breathing Apparatus repeater • Salvage materials • Ingress for staff • Mass decontamination • Emergency evacuation of staff • Emergency evacuation of occupants • Post fire investigation access
Supply suppression media	• Monitor • Low pressure delivery • Foam delivery • Emergency riser main
Use as a crane with chains, strops etc. for	• Lifting equipment • Lifting patient • Stabilising vehicles or structure • High Anchor Point

2. Aerial use by Fire and Emergency as supporting agency

Use	Description
Observation for another agency	
Action for another agency	• Access for operations e.g. sensitive negotiation • Recovery ○ Fallen patient ○ Medical patient ○ Deceased • Photography from heights by Police at MVA/crime scenes/suspicious fires

The Government's Zero Carbon emissions legislation and the environmental impact of the Fire and Emergency fleet should also be a part of any strategy.

Question 4: *Do you think the current assumed lifespan of our aerials (20 and 25 years) are appropriate? If not, why not, and what do you think they should be and why?*

We believe that the current assumed lifespan of aerials (20 and 25 years) is too long. Appliance should not be rebuilt as their performance drops significantly.

By staggering the purchase of new aerials, the latest technology can always be available. Older trucks will cascade for training and relief.

Aerial Fleet Replacement and Allocation

Question 5: *Which is your preferred option and why?*

We prefer Option C.

We favour tried and tested/off the shelf options.

Versatility and flexibility is favoured, including Hydraulic Elevating Platform (HEP), Hydraulic Elevating Monitor (HEM) and Turntable Ladder (TTL). TTL option for greater agility and fast response in narrow, sloping city streets (HEM less favoured though).

A – no. No working platform. 32 not high enough for heavy.

B – no, like C but C has platform and TTL so more versatility.

C – yes, preferred option.

D – no, like B but Snuzzle is considered ineffective.

We offer the following research to help inform the strategy

Research from comparable Fire and Emergency Services (UK and Australia), shows that Aerial Ladder Platforms (ALPs) and turntable ladders (TTLs) are the common aerial firefighting appliance for locations requiring longer reach aerial appliances. The height of these aerials varies from service to service, they range most commonly from 27m-45m in height reach.

Recently Australian Fire Services have taken delivery of Combined Aerial Pumping Appliances (CAPA). These are a 32m Aerial Ladder with a basket combined with a 4000L a minute pump.

Most commonly the larger ALPs and TTLs do not come fitted with an on-board pump, requiring an appliance to supply pressurised water to the aerial. Due to the nature of jobs requiring larger aerials for water application, there are commonly several unused heavy pumps on scene that could be used to supply water to aerial appliances without hindering operations on pumping appliances used for firefighting deliveries. Not having an on-board pump also lowers maintenance and running costs, decreases tare weight of vehicles, and can allow Fire and Emergency to buy an off the shelf item as opposed to building bespoke appliances, which have caused problems in the past.

The height ALPs and TTLs can reach should be assessed against risk for areas where these appliances are required; for example, Auckland and Wellington may require higher reach than Dunedin.

The CAPA appliance (or similar) serves as a good replacement for Fire and Emergency's Type 4 Bronto Aerial Appliance. These appliances meet and exceed the current requirements and expectations of the Type 4 aerial. Provincial brigades using a Type 4 Bronto appliance share common feedback: "reliability is an issue", "aerial reach is too short", "control systems are outdated and being tethered to the truck limits the operator", "platform at head of ladder is useless". Looking into similar fire services, most are not operating an appliance like Fire and Emergency's current Type 4 aerial.

Conclusion

Comparable fire services aerial fleets are most like 'Option C' described in FENZ Aerial Strategy Discussion Document. New ALPs, TTLs and Heavy Pump Aerials would see FENZ Aerial Fleet become tenfold more capable; would allow more suitable aerials to be available for use when needed; and allow officers to include aerials more in tactical decisions. This would also allow Fire and Emergency to keep good condition older aerials as relief aerials, replacing the current relief fleet.

Consideration should be made to the heights listed in Option C, with allowance for larger height reach dependent on local risks as well as what is available on the market. Consideration should also be made for ALPs and TTLs to be brought as 'off the shelf' instead of becoming bespoke appliances by fitting water pumps. The 'Heavy Pump Aerials' basket should be either a 2 or 3-person basket instead of the current platform on the Type 4 aerial.



Australian Capital Territory 45m Aerial Ladder Platform



New South Wales Aerial Ladder Platform



Hereford & Worcester Fire & Rescue ALP



London Fire Brigade Turntable Ladder



Avon Fire & Rescue Turntable Ladder



Australian Combined Aerial Pumping Appliance (CAPA)



Australian Combined Aerial Pumping Appliance (CAPA)

Question 6: *When determining aerial appliance allocation, are there additional considerations outside of the current Fleet Strategy (2015) criteria and the NRRM model analysis?*

Several considerations were raised by members which they felt were outside of the current Fleet Strategy (2015) criteria and the NRRM model analysis.

- Predetermined attendance (PDA)/Response standards – should be reviewed in conjunction with aerial appliance review to ensure new appliances are utilised to their full potential.
- Looking immediately at ‘like-for-like’ replacements predisposes the ONLY option to Bronto when many other viable options exist.
- Longer reach is most certainly required, across all types. Heavys are too short for effective use above the 10th floor. Pump Aerials are useless at 17m for any aerial strategy.
- Fitting new Aerials into stations shouldn’t be a problem, as low travel height options allow for overhead restrictions.
- Wider footpaths will present reach issues, even for 32m+ aerials.
- Consideration of future town planning and infill plans and policies where structure and access design impacts reach and accessibility. Perhaps Fire and Emergency need to front-foot discussions with councils around town planning and development, since aerial appliances need to respond to the changing built environment.

Relief Appliances

Question 7: *Should aerial appliances be subject to a cascading model as is the case currently with Pumps? If so, what should be considered in determining the drivers and criteria for cascading?*

Yes, aerial appliances should be subject to a cascading model.

We recommend the review of the current cascading model to ensure it is responsive to changing community need.

Training

Question 8: *Which suggestions of training improvements have merit and why?*

All have merit. There is a need for more training on aerial firefighting strategy and tactics. TTT course should be reviewed to ensure it is robust enough for the training of trainers.

Question 9: *What barriers/issues could arise from these suggested improvements?*

It will be important to gain the commitment to the strategy from staff to ensure its effectiveness.

Question 10: *Do you have additional considerations to improve training for aerial operators?*

An ongoing programme of assessment and refresher training.
